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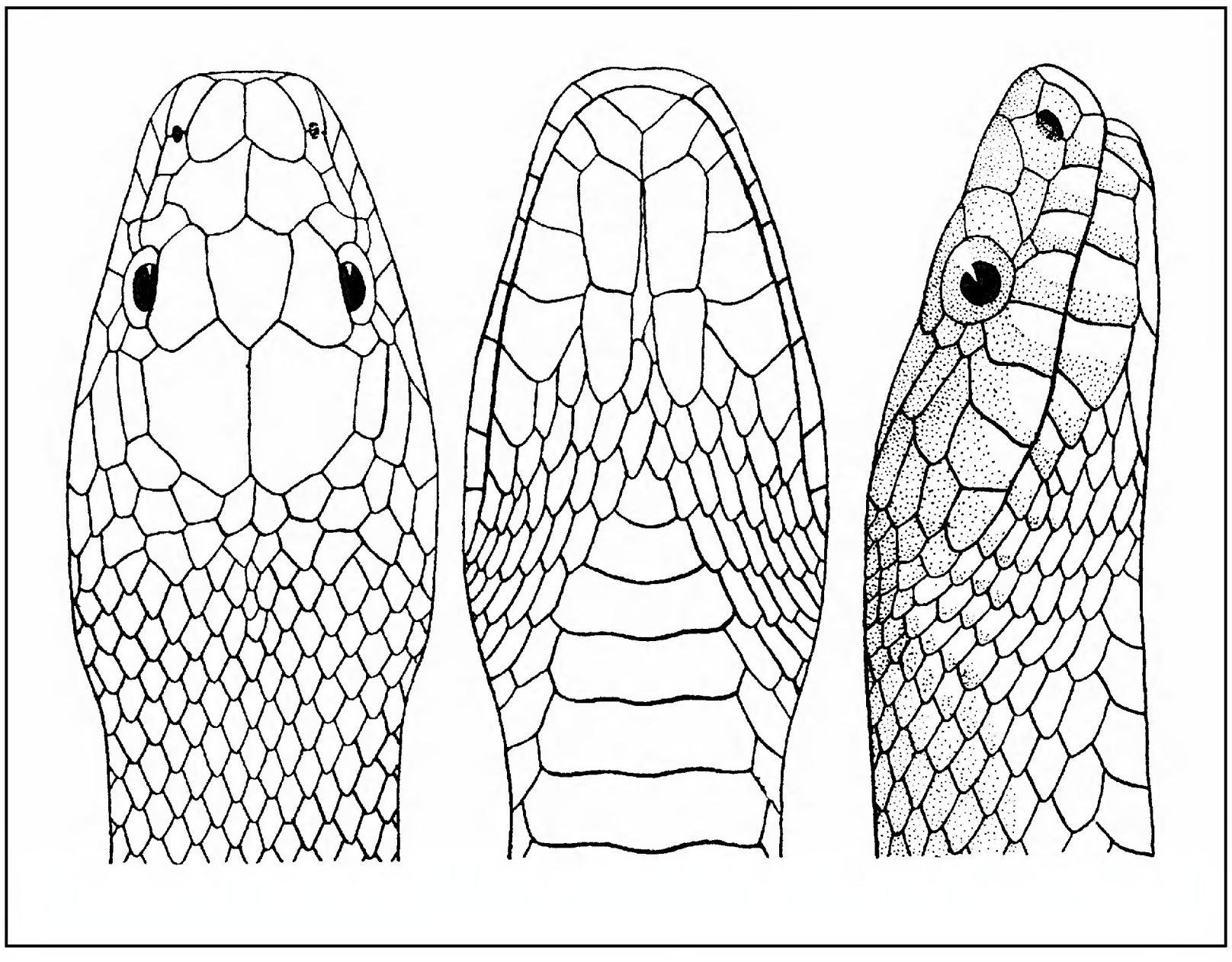

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A Review of Morphological Characters Useful for Distinguishing Morelet's Crocodile (*Crocodylus moreletii*) and American Crocodile (*Crocodylus acutus*) with an Emphasis on Populations in the Coastal Zone of Belize

Steven G. Platt*
Department of Math and Science
Oglala Lakota College
P.O. Box 490
Kyle, SD 57752

Thomas R. Rainwater
The Institute of Environmental and Human Health
Department of Environmental Toxicology
Texas Tech University
P.O. Box 764
Jefferson, TX 75657

Introduction

Morelet's crocodile (*Crocodylus moreletii*) and the American crocodile (*C. acutus*) are broadly sympatric in the coastal regions of Belize, Mexico, and perhaps Guatemala (Smith and Smith, 1977; Thorbjarnarson, 1989; Platt, 1996; Lara et al., 1997; Platt and Thorbjarnarson, 1997). In Belize, *C. moreletii* is common in inland freshwater wetlands on the mainland, while *C. acutus* is most abundant on offshore cays and atolls; however, the two species occur together in brackish mangrove swamps of the coastal mainland (Meerman, 1992; Platt and Thorbjarnarson, 2000a, 2000b). *Crocodylus moreletii* and *C. acutus* are morphologically similar and difficult to distinguish in the field, thus presenting special problems for investigators, particularly with regards to population surveys (Smith and Smith, 1977; Meerman, 1992). Consequently, misidentifications are not uncommon (e.g., Stoddart, 1962), even among professional herpetologists (Smith and Smith, 1977; Thorbjarnarson, 1989). Because accurate field identifications are an obvious prerequisite for biodiversity studies, conservation planning, and wildlife management (Sutherland, 1996), our paper is intended as a review of the morphological characters useful for distinguishing *C. moreletii* and *C. acutus* with an emphasis on populations in coastal Belize.

Species identification

Morphological characters useful for distinguishing *C. moreletii* and *C. acutus* are summarized in Table 1. Differences in body coloration have been proposed as a distinguishing character, with *C. acutus* being somewhat paler than *C. moreletii* and having dark crossbands (Schmidt, 1924; Brazaitis, 1973). However, Meerman (1992) reported difficulties in separating crocodiles based on body coloration color, and Abercrombie et al. (1980) stated that field identifications based on color were unreliable. Likewise, our experience (Platt and Thorbjarnarson, 1997, 2000a, 2000b; Platt et al., 1999, 2004) suggests there is considerable intraspecific variation and interspecific overlap in the body coloration of both species. Such variation is to be expected as pigmentation patterns in crocodilians appear to be influenced by a complex array of genetic factors, incubation temperatures, habitat, and social status (Deeming and Ferguson, 1989; Richardson et al., 2002). Most importantly, body coloration is often not readily apparent during nocturnal spotlight surveys for crocodiles.

Body size is occasionally mentioned as a useful characteristic for distinguishing *C. acutus* from *C. moreletii*, with the former being somewhat larger (Perez-Higareda et al., 1991). In the past *C. acutus* attained total lengths (TL) of up to 6.25 m (Alvarez del Toro, 1974), although crocodiles this large are rarely found today (Thorbjarnarson, 1989). Earlier reports that placed the maximum TL of *C. moreletii* at 2.5 m (Neill, 1971; Brazaitis, 1973) are now regarded as erroneous (Platt, 1996), and were probably based on populations heavily impacted by hunting that contained few if any, large adults (Perez-Higareda et al., 1991). The maximum size range for *C. moreletii* remains ill-defined (Platt, 1996), but specimens up to 4.1 m have been collected and even larger animals observed in Mexico (Perez-Higareda et al., 1991). Likewise, we captured *C. moreletii* up to 3.0 m TL and examined the skull of an animal estimated to be 3.7 m long in Belize (Platt, 1996; Rainwater et al., 1998; Platt and Rainwater, unpubl. data). Thus, only extremely large (TL>4.5 m) crocodiles may be identified on the basis of body size alone, and these are the least frequently observed size class (Platt and Thorbjarnarson, 2000a).

The morphological characters most useful for distinguishing *C. acutus* from *C. moreletii* include differences in the head and skull (Figure 1), and dorsal and subcaudal scutellation. In general, the head of *C. acutus* is more slender than the broad,

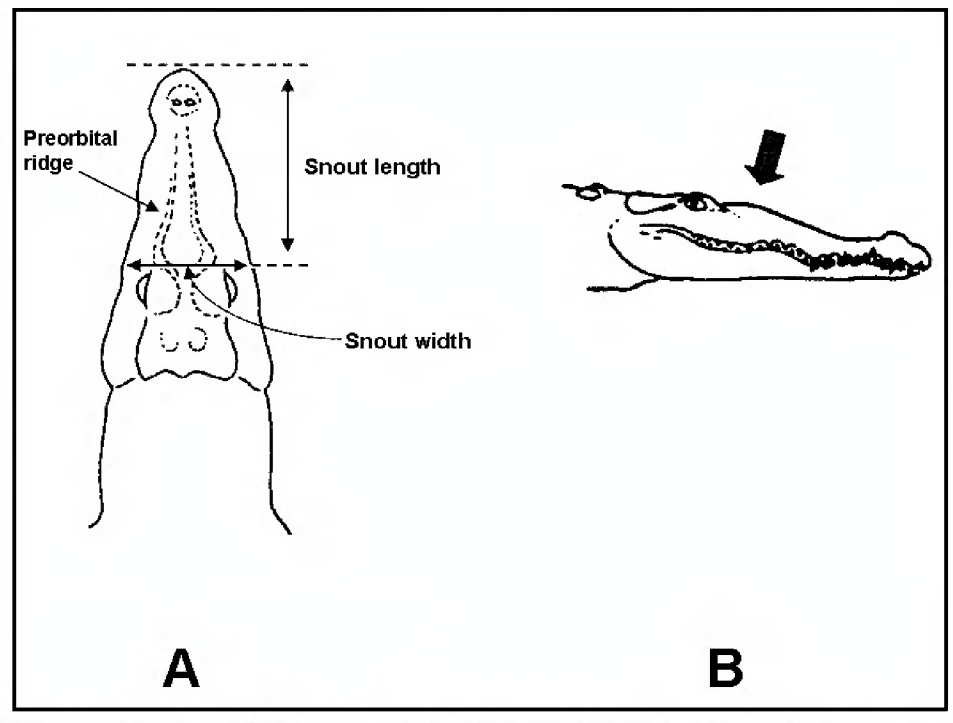

Figure 1. Crocodile head and skull characters. **A**. Dorsal view showing snout-width, snout-length, and preorbital ridge. **B**. Lateral view of head with arrow denoting position of preorbital ridge. (Modified from Brazaitis, 1973).

* Current address of SGP: 1674 Ormandy Drive., Baton Rouge, LA 70808.

Table 1. A comparison of morphological characters used for distinguishing Morelet's crocodile (*Crocodylus moreletii*) from the American crocodile (*Crocodylus acutus*). Superscript numbers denote references (see below).

Character	Morelet's crocodile	American crocodile
GENERAL		
Coloration	Dark green to black [1]	Gray brown with dark crossbands [1]
Maximum total length	Rarely > 4.0 m in length [2]	To 4.0 m and occasionally larger [3,4,5]
SKULL and HEAD		
Snout length	1.5 × basal width [1]	1.8 to 2.5 × basal width [1]
Preorbital ridge	Present but reduced [1, 3, 6]	Well developed [1, 3]
Premaxillary suture	Transverse [2, 7]	Extends posteriorly [2,7]
SCUTELLATION		
Nuchal scale group	4 enlarged scales in a square flanked by a single scale on each side [1]	1 to 6 scales of variable size and arrangement [1]
Dorsal scales	15 to 17 transverse rows of 4 to 6 scales [1]	14 to 17 (usually 16) transverse rows of 2 to 6, but rarely more than 4 scales [1, 8]
Double caudal whorls	17 to 20 [1]	16 to 17 [1]
Single caudal whorls	19 to 21 [1, 9]	15 to 16 [1]
Ventral scale rows	29 to 33 [1]	26 to 32 [1]
Subcaudal scales	Irregular scales present on ventral and lateral surfaces [10]	If present, confined to lateral surface [10]

1. Brazaitis, 1973. 2. Perez-Higareda et al., 1991. 3. Thorbjarnarson, 1989. 4. Alvarez del Toro, 1974. 5. Schmidt, 1924. 6. Ross, 1987. 7. Lee, 1995. 8. Ross and Mayer, 1983. 9. Platt and Thorbjarnarson, 1997. 10. Ross and Ross, 1974.

compact head of *C. moreletii* (Schmidt, 1924). However, this difference becomes less apparent as crocodiles mature, and among older *C. acutus* the snout-length to snout-width ratio often approaches that of *C. moreletii* (Smith, 1938). *Crocodylus acutus* has the most pronounced median preorbital ridge (POR) of any crocodilian (Brazaitis, 1973; Alvarez del Toro, 1974; Thorbjarnarson, 1989). *Crocodylus moreletii* also has a prominent POR, although it is less developed than in *C. acutus* (Brazaitis, 1973; Alvarez del Toro, 1974). The size and shape of the POR is thought to be sexually dimorphic and may vary geographically among *C. acutus* (Thorbjarnarson, 1989), but these relationships have not been explored in *C. moreletii*. The configuration of the premaxillary suture differs between the

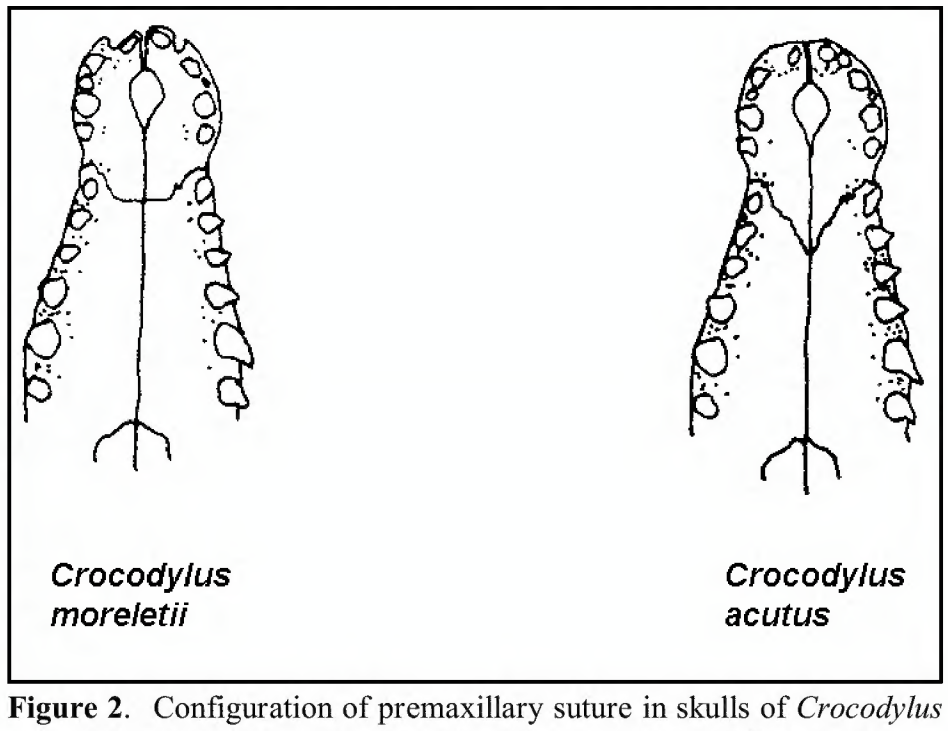

Figure 2. Configuration of premaxillary suture in skulls of *Crocodylus moreletii* and *C. acutus* (modified from Ross [1987] and Lee [1995]).

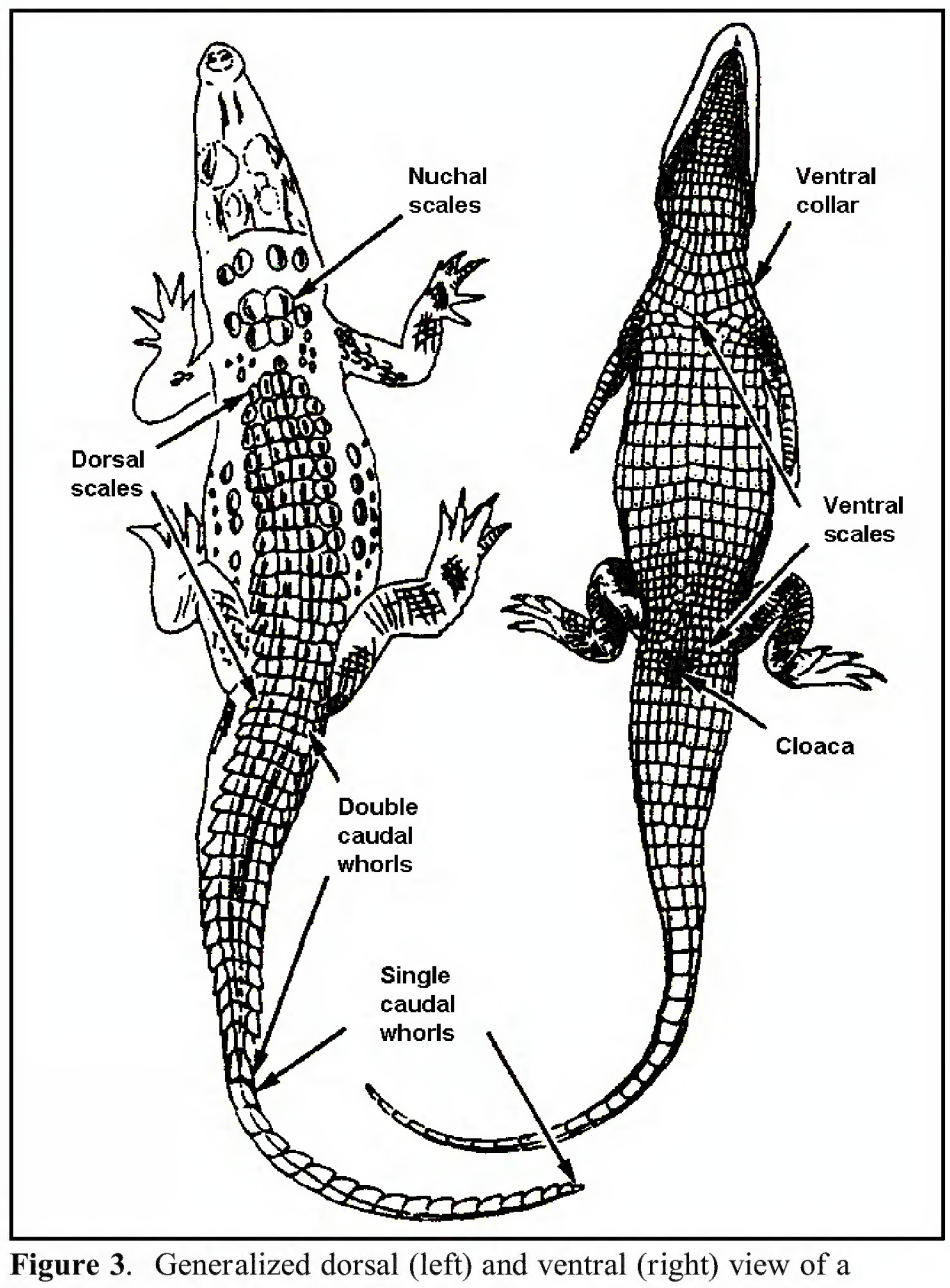

Figure 3. Generalized dorsal (left) and ventral (right) view of a crocodile showing major scale groups, ventral collar, and cloaca. Transverse dorsal scale rows are counted by beginning and ending with rows indicated by arrows. Ventral scale rows are counted from the ventral collar to the anterior margin of the cloaca. (Modified from Brazaitis, 1973).

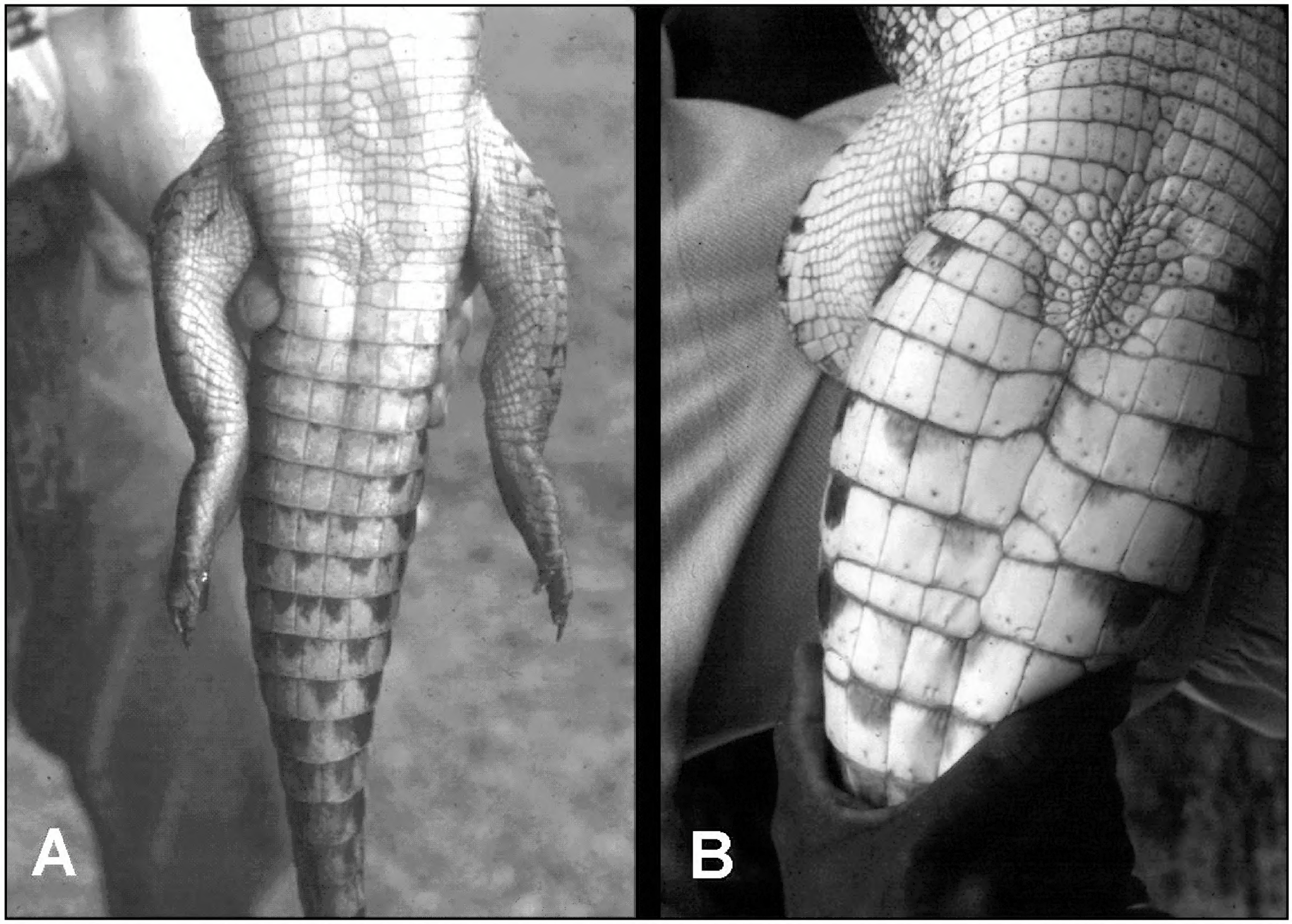

Figure 4. Subcaudal scalation in the proximal end of the tail of *Crocodylus acutus* (A) and *C. moreletii* (B). Note the symmetrical appearance of subcaudal scales in *C. acutus* and the obvious irregular shaped scale groups in *C. moreletii*. Subcaudal scalation is probably the most reliable character for distinguishing the two species in the field. *Crocodylus acutus* captured on Maps Cay, Belize. *Crocodylus moreletii* captured in coastal mangrove wetlands near Monkey River Town, Belize. (Photographs by Steven G. Platt).

two species; this suture extends posteriorly in *C. acutus*, but is transverse in *C. moreletii* (Figure 2) (Schmidt, 1924; Smith, 1938; Ross, 1987; Lee, 1995). This suture is visible only on skulls and cannot be used to distinguish living animals. However, skulls are often retained by fishermen and hunters and can yield useful data during field surveys (Platt and Thorbjarnarson, 1997).

Scutellation (Figure 3) in *C. acutus* is highly variable among individuals and overlaps considerably with *C. moreletii* (King and Brazaitis, 1971; Brazaitis, 1973; Ross and Mayer, 1983). *Crocodylus acutus* has the most reduced and irregular arrangement of dorsal osteoderms of any extant crocodilian, with rarely more than four scutes in any transverse precaudal scale row (Ross and Mayer, 1983). In contrast, *C. moreletii* generally has more than four dorsal osteoderms (usually 5 to 6) in each transverse precaudal scale row, and rarely fewer (Brazaitis, 1973). Likewise, the arrangement of nuchal scales differs between the two species and may prove a useful character for identification. In *C. moreletii* the nuchal group consists of four large scales forming a square flanked by a single scale on either side (Brazaitis, 1973). In contrast, considerable variation is evident in the nuchal group of *C. acutus*, which may be composed of from one to six scales of variable size and arrangement (Brazaitis, 1973). Because of considerable interspecific overlap in the number of double and single caudal whorls and ventral scale rows, these characters are of limited utility for species identification.

Perhaps the best diagnostic character for distinguishing *C. moreletii* and *C. acutus* is the presence of irregular scale groups among the caudal scales of *C. moreletii* (King and Brazaitis, 1971; Brazaitis, 1973, Ross and Ross, 1974). Caudal irregularities in the proximal half of the tail may be present in both species. However, in *C. acutus* no more than three are generally present, consisting of one to three scales confined to the lateral surface of the tail (Figure 4A). Caudal irregularities are most pronounced in *C. moreletii* and are always on, but not limited to, the ventral surface of the tail (Figure 4B). These irregularities consist of either a single scale or two to many scales arranged laterally. *Crocodylus moreletii* may also exhibit irregular scale groups on the lateral surface of the tail similar to those occurring in *C. acutus*, but these are always accompanied by ventral irregularities (Ross and Ross, 1974).

In summary, a combination of the number of dorsal scales in each transverse row, the number and arrangement of nuchal scales, and the presence of irregular scales on the ventrolateral surface of the tail are probably the best characters for separat-

ing *C. acutus* and *C. moreletii* in the field. Because these attributes are not readily obvious under field conditions, even to experienced investigators, crocodiles must be captured to obtain a positive identification in habitats where the two species occur together. Identification can be further supported by skull and head characters. Other morphological attributes, including coloration, body size, and certain scale groups are of dubious value as criteria for distinguishing the two species. Field identifications of either species based solely on visual observation in habitats where sympatry is likely must remain suspect (e.g., Ouboter, 1992).

Acknowledgements

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Quadruple Nesting of a Temperate Asian Pond Turtle (Batagurinae)

David S. Lee and William Mulligan
The Tortoise Reserve, Inc (www.tortoisereserve.org)
1879 White Lake Drive, Box 7092
White Lake, NC 28337
torresinc@aol.com

Marine turtles are known to produce multiple clutches of eggs per season. Loggerheads, *Caretta caretta*, for example, may nest up to seven times in one summer (Lenarz et al., 1981). Single season double clutching is known for a number of tortoises and freshwater turtles of various families and genera, but single annual clutches appear to be the norm. This is particularly true of temperate North American species, where multiple clutching is known for but a few species. In North American pond turtles (Emydidae) double clutching is known in a variety of genera; i.e., some races of box turtles, *Terrapene carolina* (Jackson, 1991), while triple clutching is reported for other races of box turtles (Dodd, 1997), spotted turtles, *Clemmys guttata* (Litzgus and Mousseau, 2003), and painted turtles, *Chrysemys picta* and sliders, *Trachemys scripta,* can produce up to five clutches per season (Moll, 1973; Jackson, 1988).

Here we report on the quadruple clutching of a species of Asian pond turtle. The significance of this is unclear. The general pattern in North American pond turtles is that southern populations produce smaller clutches but deposit eggs more frequently than populations of the same species occurring further north. On a species level northern populations are restricted by shorter summers and typically produce large single clutches. In addition, turtles and tortoises at higher latitudes tend to be larger on both population and species levels, allowing females to maximize clutch size (Tinkle, 1961; Wilbur and Morin, 1988; Willemsen and Hailey, 1999). However there are numerous variations to these trends (see discussions in Dodd [2001] and Litzgus and Mousseau [2003]). Compared to North American species, the life histories of most Asian turtles are generally not well documented, and for the many species of batagurines that have not been bred regularly in captivity reproductive information is typically limited.

In the summer of 2005 a single pair of Japanese pond turtles, *Mauremys japonica*, laid four clutches of eggs. All were fertile. These turtles are maintained in North Carolina in enclosed outdoor pools. They live in these pools throughout the year, hibernating from late October through mid March. During warm spells in the winter they are often seen swimming below the surface, but they do not feed. In 2004 five hatchlings were found in their pen in mid August. The land area of the pen had been flooded for several days by heavy rains resulting from hurricane Charlie. If other clutches were present they did not hatch. In 2005 we added an elevated sand area for nesting and decided to incubate the eggs indoors in commercial incubators. Eggs from various clutches of 6 species of temperate and subtropical Asian turtles were all incubated at 27°C.

Our single female produced four clutches of eggs in 2005. The total number of eggs was 25, 18 of which hatched. Dates of laying are unknown and dates presented indicate when clutches were found. Clutch 1: 28 June three eggs recovered all of which later died as nearly full term embryos. As several other species shared the same ponds and as the eggs may not have been identified properly young were removed from the eggs and all proved to be *M. japonica.* Clutch 2: seven of nine eggs hatched on 22 August. Clutch 3: eggs recovered 6 August and five of the seven eggs hatched between 29 and 30 September. Clutch 4: six eggs recovered on 22 August all hatched between 15 and 17 October.

Mauremys japonica is one of a few species of Asian pond turtles where published information regarding reproductive biology has been available for a number of decades. Fukada (1965) reported eggs are laid annually between mid May and late June. Two to three clutches of five to eight eggs are produced each year, with the number of eggs decreasing with each clutch. Fukada found ten to fifteen days is the normal period between subsequent clutches. The incubation period is reported to be about 70 days. While the quadruple clutching seems exceptional, and may be an aberrant artifact of captivity, studies of a number of North American turtles suggest that this behavior may be the norm for some Asian species as well. However, the potential annual reproductive output of our single adult female is in the same range as the Japanese pond turtles reported by Fukada (1965) that produced three clutches of five to eight eggs. The biological advantage is perhaps the age and size differences between young from different clutches. Hatchlings from the last clutch had carapace lengths ranging from 30.7 to 32.6 mm ($\bar{x}$ = 31.6) and weighed 5.6–6.1 g ($\bar{x}$ = 5.93), (n = 6). Turtles from clutch 2, measured on the day clutch four hatched (16 October), were already 46.6–49.0 mm ($\bar{x}$ = 47.8) in length and weighed 15.6-19.3 g ($\bar{x}$ = 17.3) (n = 7)—nearly a threefold increase in mass. Fukada (1965) reported hatchlings to be 25 mm in carapace length.

By spreading out the reproductive season over four separate nesting events, the females would place a number of distinct size classes of offspring into the system, with the different sizes or starting dates possibly having survival advantages (response to drought, flooding, food availability, predator search images and seasonal predators such as migratory herons) greater than those from the other clutches. For temperate species early hatching would allow hatchlings to grow prior to hibernation and late hatchlings to possibly get through their first winter on food reserves from absorbed yolks. More importantly, clutches deposited over time would decrease the likelihood that the total reproductive output of a single individual would be consumed by a nest predator (Obbard and Brooks, 1981). Thus, multiple clutching may be more important to long-term existence of populations than total reproductive output.

Increase in clutch size with increasing latitudes has been reported in a number of North American turtles (Congdon and Gibbons, 1985; Iverson, 1992; Iverson et al., 1993, 1997; Iverson and Smith, 1993; Tinkle, 1961). It seems likely that Asian pond turtles should have similar reproductive strategies where in lower latitudes smaller multiple clutches would have a significant survival advantage. Japan has a long north/south axis with the endemic *M. japonica* being found on Honshu, Keosha and Shikoko Islands extending south from latitude 41 °N to 31 °N. It would be interesting to know if females from the northern portion of their range produce larger but fewer clutches. Of equal interest would be the documentation of reproductive output of captive individuals maintained out doors at different latitudes. Is multiple clutching a long-term genetic adaptation, simply an individual's response to climate, or both? In any scenario it is clear that long before academic biologists learned to charge windmills, or that Don Quixote knew about all this egg storage stuff (De Cervantes 1605), turtles living in appropriate climates had already discovered advantages to not venture all their eggs in one basket.

The Japanese pond turtles discussed here are part of the Asian Turtle Consortium's (www.asianturtle.org) long-term effort focused on breeding declining populations of Asian turtles for the future goal of repatriation into their native counties. The Tortoise Reserve is pleased to be able to contribute to this private sector conservation program.

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Herping in Australia—Field Notes and More
Part 11: Southeast Queensland

Raymond Hoser
488 Park Road
Park Orchards, Victoria 3134
AUSTRALIA

The Other Hoppos

Broad-headed snakes (*Hoplocephalus bungaroides*) are the species from this genus most commonly encountered around Sydney. The genus includes three species of small to medium sized arboreal elapids that are noted for being high-strung. We sometimes call them the "troppo-hoppos." I have gone looking for the other two species of "Hoppo," or at least one of them. You'll understand where I'm coming from shortly.

Once I went to a dry woodland area just west of Rockhampton, Queensland, in search of pale-headed snakes (*Hoplocephalus bitorquatus*). This species is generally brownish-grey dorsally, with a paler light-gray head; hence the species' common name.

The habitat was farming country and the vegetation consisted of grassland interspersed with live gum trees and ring-barked (dead) trees. The pale-headed snakes were being caught by local herpers underneath the bark of ring-barked trees. For those who don't know, ring-barking is the removal of the outer layers of the trunk (in a ringlike pattern) which prevents nutrients from moving up the tree trunk. The result is a dead tree.

The time of year was late February. The weather was unseasonally cold and wet and a cyclone had just passed over. The rain was torrential. Now I wasn't even interested in catching a pale-headed snake and was only there under duress. My friend wanted some. Anyway, the weather was so uncomfortable, that we soon gave up our hunt without success.

Pale-headed snakes are not commonly kept here in Australia, nor is there any great demand for the species. I assume that this is because of the aggressive nature of the species, which is typical of the genus.

Some texts report the species as rare, but I'm not so sure. My guess is that its arboreal habits simply make it very hard to find, even in areas where numbers are great.

Now I've never actually gone looking for Stephen's banded snakes (*Hoplocephalus stephensi*), but when you are a herper in Brisbane, Queensland, they are species it's almost impossible to miss. I lived in Brisbane, the capital city of Queensland, for the first six months of 1987. This city of about two or three million people is located an hour and a bit's drive north of the New South Wales border, on the coastal strip.

Upon arrival there I looked at the local roadmap. I wanted to find a good road to go night-driving for herps. On the map I saw a road running from Mount Nebo to Mount Glorious and beyond to Samford. As it had dark green on either side, it clearly ran through a national park or some other kind of bush reserve.

And yes, when the weather was slightly hotter than normal and the other factors also looked good (like falling air pressure and no moon) I took a few spins up the road. Being a coastal habitat, the area's herpetofauna had a lot in common with Sydney's although it was about 1000 km by road to the north.

I found the same two species of legless lizards (Burton's [*Lialis burtonis*] and scalyfoot [*Pygopus lepidopodus*]), death adders (*Acanthophis antarcticus*), brown tree snakes (*Boiga irregularis*) and small-eyed snakes (*Rhinoplocephalus nigrescens*).

But there were a few other notable differences, including the Stephen's banded snakes, which were relatively abundant, being seen every night or two. Now considering that these are arboreal snakes (which is something I am not going to dispute), it's amazing how many get found crossing the roads!

Not all these snakes had the dark and light bands characteristic of the species. Some had their lighter markings arranged into a series of saddles instead. There is also an allegedly unmarked morph of this species from the ranges bordering New South Wales and Queensland, but I've never actually seen one of these.

Also seen on the roads around Mount Glorious were carpet pythons (*Morelia macdowelli*) instead of diamonds (*Morelia spilota*) as in Sydney. But here the carpet pythons were far more numerous.

And also found here, but never seen by me on roads previously was the rough-scaled snake (*Tropidechis carinatus*). If I can describe these snakes in one word, I can only say "headcase." They just thrash about and want to kill you! These thickset, medium sized (60–90 cm, about 2–3 ft) snakes have a dangerous bite and won't hesitate to use it.

The species was turning up on the roads quite commonly and always in the immediate vicinity of creeks and rainforest gullies that ran down the forested hillsides typical of the area. Bearing in mind the number of these snakes seen, typically one or two a night and the fact that they were all coming out of a habitat that in combination may have only accounted for a total of a few hundred meters of road, these snakes must have been extremely abundant in their preferred habitat. I never went looking for them by day, but assume that they couldn't be too difficult to find, if I had to. But why would anyone want one of these things?

Temperature Differences

There were some things I had difficulty getting used to when driving about in Queensland. Because it is further north than Sydney the preferred temperatures of most species also seems to be higher. Generally it wasn't worth taking a drive "up the

mountain" unless it was at least 27°C at dusk. Even in Brisbane in summer, most nights seem to slip just under this line.

Another local reptile that spun me out was the pink-tongued skink (*Cyclodomorphus gerrardii*). Other than a few specimens found under tin near the Springwood (NSW) railway line, this was a species I'd never seen in the wild. I did a double-take when I saw my first one walking across the road at night. Actually it ran! I couldn't believe how fast it moved. Most escaped before I could get out of the car to capture them.

Then there were the scalyfoot legless lizards (*Pygopus lepidopodus*) that also took me by surprise. You see when you are a seasoned night driver in a particular area you become familiar with the creatures you come across and can usually identify them long before you even get out of the car. Every species of snake and lizard not only has a unique shape and pattern, but also moves in a distinct way. Thus you can usually separate the legless lizards from the snakes at a glance and among the snakes separate the pythons from the colubrids or elapids at a slightly longer glance.

The problem with the scalyfoot legless lizards was that they were so much larger around Brisbane (up to 90 cm, vs up to 60 cm from Sydney), that I kept confusing them with brown tree snakes. Both were reddish brown in color, of similar size and tended to crawl across the roads with their heads and necks raised off the surface.

Someone once suggested to me that Queensland is Australia's answer to Texas in the USA, in that everything here is meant to be "bigger." Maybe that's true. You see, not only were the scalyfoot legless lizards bigger, but southeast Queensland's carpet pythons are the biggest around and the small-eyed snakes are also bigger than their cousins from New South Wales and Victoria.

A drive down the same Mount Nebo–Mount Glorious Road by day is also an instructive lesson in relation to Queensland herping. In line with much of the habitat in southeast Queensland, it is severely degraded. The habitat has been grazed in past times and burnt way too often. The native undergrowth has long since given way to feral grasses and due to past logging activity, even the forest itself seems to lack as many good hiding spots as one would expect. You see most of the trees are youngish and the same age and the forest generally lacks the dead trees and fallen logs that typify a so-called "old growth forest."

Noting also that most areas are nowhere near as rocky as similar habitats around Sydney, it was amazing the sheer number of reptiles that still lived in these habitats. One can only imagine the sheer numbers of reptiles about in these areas before the habitats were degraded!

Brisbane by Night

When I think of reptiles in Brisbane, the one species that seems to stand out are the big ugly carpet pythons. To me they are just "so Brisbane." Lots of them are mean as well, which sets them apart from their southern cousins, the diamond pythons.

I recall once I was doing a show for a group of young kids at Coolangatta on the Gold Coast. I had a three-meter (nine-foot) carpet python that I thought was friendly to humans. A three-year-old child staggered towards the snake and the snake lunged at him, thinking it was his next meal. The child survived, and so too did the snake, but it served as a salutary warning not to trust the snake in future.

When driving for herps on the Mount Glorious Road, the sighting of herpetofauna doesn't stop when one drives away from the mountain. In fact you tend to see lots of critters through most of the suburbs and even sometimes in your home street in the suburbs. Unfortunately, almost always these critters are cane toads (*Bufo marinus*).

Native to South America and deliberately introduced to Australia by the ever-benevolent government in the 1930s from Hawaiian stock, these critters have overrun most of the state of Queensland, save for the driest areas.

Here in Australia there is currently (in 2002) a heated debate between reptile keepers and the government over whether or not to allow exotic (non-native) reptiles into Australia for the hobby keepers. Brisbane is without doubt one of the best possible advertisements against allowing exotics into the country. Single-handedly cane toads have all but wiped out most of the native frogs and frog-eating snakes wherever they once occurred.

Around Brisbane, only the green treefrog (*Litoria caerulea*) has held up to any reasonable extent against the invading toads. They do this because they can breed in water tanks and other refugia that are inaccessible to the ground-based toads. And so, the critter that best typifies Brisbane by night is the non-native cane toad.

However, even in Brisbane's suburbs other species hang on and in some cases thrive. Most gardens have a smattering of small skink species, some of which differ from those I was familiar to in Sydney. They can be caught when active on almost any fine day of the year.

Even larger lizards, in particular bearded dragons (*Pogona barbata*) remain common in many inner suburbs. No doubt the immense number of insects that breed in the tropical climate when combined with the immense fecundity of the lizard are a sizeable part of why they remain common. They obviously breed fast enough to replace their losses through cats, cars and direct killing by misguided people.

Driving through the suburbs of Brisbane, I never ceased to be amazed at how many of these lizards I saw perched on fenceposts and sitting in trees. Many wouldn't bother to move, even if one were to pick them up.

Another reason why Brisbane's suburbs have a decent number of reptiles in them is of course the Brisbane River. It's a large muddy watercourse that snakes its way through the western suburbs, past the central business district and into the east, before washing into the adjacent Moreton Bay. It floods every once in a while and when it does, snakes and other reptiles are sometimes washed some distance downstream. This includes from the headwaters and tributaries beyond the

outer suburbs of Ipswisch on Brisbane's western edge. Once in the inner suburbs, these reptiles can hang on for years without detection or being killed. And because the river sometimes floods across many nearby suburbs, the reach of these invaders is often far greater than would be expected from looking at the river in nonflood times.

A Death-defying Feat (?)

I recall visiting friends at Manly on Brisbane's southeast. In fact I stayed two full weeks there. As I've mentioned earlier, Australians aren't noted for their originality. This also translates to their naming of towns and suburbs. Many of them are "borrowed" names of English places (e.g., Doncaster, St. Ives, Ringwood). And yes, the governments of each state didn't have the intellect to invent new names, so simply stole them from one another. Thus you have a "Manly" in Sydney, Brisbane and just about every other major Australian city!

Brisbane's Manly—like the rest of them—is on the coast. This particular Manly is a sleepy place full of shabby fibro houses on a reclaimed marsh and sand dune. To the east is Moreton Bay (the sea), to the north more suburbs and to the southwest is a series of swamps, marshes and generally unused land.

A group of nosy, know-all local residents all told me the area was full of "tiger snakes," and "nothing else lives here." I questioned this and had a copy of a guide to the local snakes shoved in my face. Sure enough, it stated that tiger snakes (*Notechis scutatus*) were a species common to southeast Queensland, of which Manly was a part.

Who was I to argue? After all the book had to be right, didn't it? It was there in black and white! And it was a book after all! And not only that, but I was simply a southerner who really couldn't compete with these long term locals in terms of local snake knowledge.

I was directed to a disused rubbish tip on the marshland to the southwest of the township and there I started my search. In between the cane toads that had overrun the place I found a whitish-grey Burton's legless lizard coiled up under a sheet of tin. As I picked it up I thought to myself "I wonder what kind of snake these blokes will think this one is?" I also found three large adult snakes under bits and pieces of tin and car wrecks.

Bravely, I caught them all and I brought them back in a pillowcase. I opened up the bag to show the local snake experts the "tiger snakes" I'd caught. They told me that I had to eat my words and never to doubt their authority again. These were people who obviously couldn't be argued with. So to prove a point I did a death-defying stunt. I pulled out one of the snakes and made it bite me on my hand. Blood came out from the bite marks.

The men screamed in horror. I told them I was immune to the venom. They didn't believe me and wanted me bandaged up at once. You see the book said that the only treatment was antivenom and the book just had to be correct.

Before the men had got a grip on themselves I had the other two snakes biting into my wrists. It would have been pointless to try to explain to the know-alls that the snakes were really harmless keelbacks (*Tropidonophis mairii*).

To be continued

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Book Review: *Frogs: Inside Their Remarkable World* by Ellin Beltz 2005. Firefly Books Inc., Buffalo, NY, and Firefly Books Ltd., Richmond Hill, Ontario, Canada ISBN 1-55297-869-9. 176 pp. Hardcover. $34.95*

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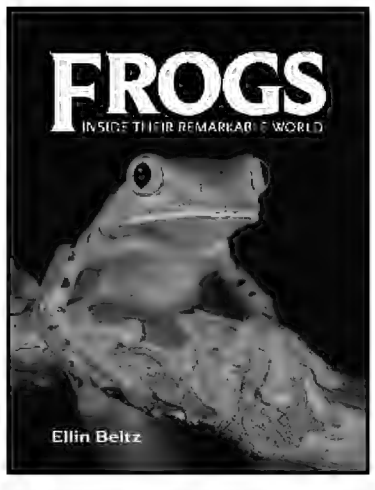
James N. Stuart
Conservation Services Division
New Mexico Department of Game & Fish
Santa Fe, NM 87504-5112
James.Stuart@state.nm.us

Regular readers of the *Bulletin of the Chicago Herpetological Society* will recognize the author of this wonderful new book as the long-time writer of "HerPET-POURRI," this journal's monthly column on what is new, notable, and often weird in the parallel worlds of herpetology and herpetoculture. She has also written some semi-technical



references (Beltz 1995, 2005) that I've used frequently over the years. However, to my knowledge, *Frogs* is Ellin Beltz's first foray into authoring a popular book and it is an impressive effort: an easy-to-read and comprehensive review of the author's favorite group of herpetofauna, the order Anura.

The book is beautifully formatted and large (8½ × 11 in) with more than 125 color photographs. The photos are the first thing that catches your attention since all are excellent. Many of the images were taken by Michael and Patricia Fog-

den, who added their photographic talent to Harry Greene's (1997) book on snakes. Each photographic subject is identified by English and scientific name and is often shown exhibiting an interesting behavior (feeding, breeding, etc.).

Chapter 1 (A Brief Natural History) is a nice overview of the evolutionary history and fossil records of frogs and their phylogenetic relationship to other amphibians. It introduces the reader to the 31 recognized families of living frogs, which are discussed in more detail in Chapter 2 (Frog Families). The family summaries are well done and provide numerous details without being overly technical. The author discusses the differences between "frogs" and "toads," noting correctly that all anurans are essentially frogs. Of course, the distinction between "frog" and "toad" is mainly a legacy of our English language and the species that western Europeans knew; many anurans could be called by either name. Although Beltz includes North American spadefoots in the Pelobatidae, some taxonomists have recently split the New World forms off into the Scaphiopodidae. Still others might quibble about other family level designations and scientific names, but this is to be expected. Taxonomy is a field that is always in flux and you're never going to please everyone.

Chapter 3 (Anatomy and Physiology) is an excellent discussion of basic frog biology, including reproduction, ontogenetic development, feeding, sensory systems, and behaviors associated with these. General anatomy, from skeletal to epidermal is also reviewed, and there is a good discussion on toxicity of various species. Much of the discussion is generalized but specific examples are provided where needed, such as for species that deviate markedly from the "typical" frog in some respect.

Chapter 4 (Environment and Adaptation) is a review of environmental factors that can affect frogs and discusses the human-caused threats impacting populations worldwide. Habitat destruction, chemicals in the environment, chytrid fungus and other diseases, introduced species, and global warming are all discussed. There has been a rapid increase in the scientific and popular literature on frog declines in the last 15 years or so, and the author does a good job of capturing the highlights of this complex problem. One minor comment: Beltz writes that New Mexico is one of the states where nonnative clawed frogs (*Xenopus* sp.) have been found, which prompted me to ask around among our local herpers as I was unaware of any state records. Some Web sources have similarly noted *Xenopus* from the state but at present this appears to be unverified.

Frogs have long been popular creatures in story and legend, and Chapter 5 (Frogs in Myth and Culture) is a nice summary of how various species have figured in mythology worldwide. There's even discussion of frogs in modern mythology and media, from the hapless animals that seem to end up in various food packages (triggering tabloid news stories and lawsuits) to the celebrated Kermit and his inebriated kin, the Budweiser frogs. And no discussion of frog stories would be complete without mention of Mark Twain's famous jumping frogs of Calaveras County.

There is also a chapter called "Frog Miscellany" which is a potpourri of interesting facts about anurans, including the most toxic frog, the earliest scientific experiment to be performed on a frog, and which species is largely vegetarian. Several entertaining "sidebar" essays are provided which describe the author's personal experiences with various species. The book also has a glossary of terms, a list of general references, and an index of scientific and English names and various topics.

I think this would be an excellent book for any young adult who has a budding interest in herpetology. (My wife, incidentally, plans to use my copy as a classroom reference when she teaches her high school zoology course.) As a coffee-table book, it is especially eye-catching with its colorful photography and large format. And it's also a great book for those who are already fascinated by frogs and want a concise, well-written, and well-illustrated summary of the order Anura that is accurate and informative but not overly technical. In short, if you have bothered to read this far in the review, you should have a copy.

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HerPET-POURRI

by Ellin Beltz

Roll over and play dead?

"If the legal fight to have the route of the A89 [motorway] changed fails, the [yellow-bellied] toad's usual tactic of rolling onto its back to show its poisonous belly is unlikely to stop the bulldozers. `[The toad's] only defense is to play dead by lying on its back and showing its colored stomach, which contains irritant products,' said one French naturalist. `In the animal world, a yellow stomach is a sign which never lies: if you bite, you are going to get a nasty surprise. There might occasionally be one bite, but never two.'" At risk is a huge highway project being punched through one of the few remaining natural areas in Europe—and it's being questioned by the EU for more than its impact on toads, too. [*HerpDigest*, January 5, 2006, from Allen Salzberg

Nightmare in Interlachen

A woman walking to a friend's house watched in amazement as a 13-foot-long, 130-pound albino Burmese python ate her friend's pet—a black cat. *WTLV-TV* (Jacksonville, Florida) asked: "So how did the snake get loose in the first place?" What they discovered was that the owner had fed the python two live rabbits. The first one was eaten, but the second one dug a hole under the wire fence surrounding the snake and escaped—followed by the snake which had been loose for two days when it was discovered in feline delicti. [January 6, 2005 from Wes von Papineau]

An exception to every rule

Japanese zookeepers were astonished when a 2-year-old, 4-foot-long male rat snake named "Aochan" refused to eat frozen mice, yet when presented with a live hamster nicknamed "Gohan" ("meal" in Japanese) decided to keep it for a pet. The two have lived together in a tank at the Tokyo Mutsugoru Okoku Zoo since October. The rat snake developed a taste for frozen rodents and shows no sign of eating his roomie. [Associated Press and numerous internet sources, January 19, 2006, from Kathy Bricker] One of the blogs that picked up this story ran the photo of Gohan and Aochan right next to each other in a cardboard hide-box. My favorite reader caption was: "Oooh, President Clinton, it's so exciting to be a White House intern!"

Biological imperative

"Hitchhikers are more commonly known to stand on the roadside, hoping for generous drivers to take them to their destination. So imagine the surprise of one holiday-maker who returned from The Gambia, only to find an African toad had hitched a lift in his suitcase. [When the man] got back to his home in Small Heath and was unpacking his bag . . . the amphibian hopped out. He said: `I was chatting with my partner about how good the holiday had been when we looked down to see this toad emerge from the bag. We couldn't believe it—it was the same toad we'd seen on the hotel balcony the night before while we were playing cards.'" [icsolihull.icnetwork.co.uk/news, January 6, 2006, from Wes von Papineau]

Canaries singing madly

Deformed amphibians aren't news any more, or are they? Several years of the '90s were spent in trying to find "the cause" of amphibian deformities. Many candidates were put forward from UV light, to nematodes, to pollution, to acid rain, to introduced fish, and so on. A recent paper done on the Atlantic island nation of Bermuda has found that higher percentages of cane toads (*Bufo marinus*) are deformed in public places such as golf courses rather than in backyard ponds. They also noted no *Ribeiroia metacercariae* nematodes or their cysts were found in 80 malformed metamorphs. In conclusion, they wrote: "These data suggested that many *B. marinus* breeding sites in Bermuda are potentially contaminated with developmental toxicants." [*Applied Herpetology*, Volume 3, Number 1, 2006, pp. 39-65, via *HerpDigest*, January 10, 2006, from Jim Harding]

A giant hop for frogkind

Two hundred adult southern corroboree frogs were released in its former wild range. Australia's *Sydney Morning Herald*, January 11, 2006, reports: "Since 1997 the NSW National Parks and Wildlife Service and the Amphibian Research Centre in Melbourne have run a joint program in which about 4000 captive-reared tadpoles have been released into Kosciuzsko National Park in the hope that they would mature into breeding adults." Unfortunately most of those carefully reared offspring succumbed to chytrid fungus, so the agencies went the extra mile, raising up another crop all the way to adulthood in an effort to break the cycle of decline from hundreds of populations in Australia's highest swamps, to only 18 known localities, most with fewer than five adults. [from Wes von Papineau]

Fabulous resource

The American Museum of Natural History has made all of its publications available and searchable online at http://digitallibrary.amnh.org/dspace/ including their *Novitates*, the *Anthropological Papers*, the *Bulletin* and *Memoirs*. Just type in something simple like frog or toad and see how well it works! [from Jim Harding, Joe Collins and everyone else with a research interest and email!]

Evolution filksongs

Visit http://www.hmnh.org/galleries/ichtheology/devonian/index.html and download the mp3! As contributor Jim Harding wrote, you've got to love those Sarcopterygian Devonian Blues! There's also some great stuff on http://www.hmnh.org/galleries/ichtheology/index.html. My favorite refrain, "Yo momma was a lobe-finned fish." And, at least in my case, it's probably true.

A smoking hot gun?

J. Alan Pounds, resident researcher at the Monteverde Cloud Forest Preserve and Tropical Science Center in Costa Rica co-authored an article in *Nature* which "concluded that the fungal epidemic has been stoked primarily by global warming, a

finding that may have broad implications for at-risk species around the world. `The basic message is that global warming is already causing species extinctions, and a lot of them,'" said Pounds who added that "lethal disease may be the bullet, but climate change is pulling the trigger." The exact mechanism is the focus of the article. The January 12, 2006, *Newsday* story continues: "Before the upward creep of global temperatures in the 1970s . . . the amphibian fungus was held in check by normal fluctuations that made the daytime too hot or the nighttime too cold. But like the porridge in the tale of Goldilocks, many harlequin frog habitats—especially in the middle elevations where most extinctions have occurred—have been moderated by global warming—enough to create just the right temperature for lethal fungus." This story made global press including : *New York Times*, *Newsday*, Associated Press and many others, from Ms. G. E. Chow, Wes von Papineau, Allen Salzberg, Jim Harding, Joseph Collins, Bill Burnett, Alan Rigerman and probably some in the mail yet.

Or an elephant in the dark?

• Next the Associated Press reported: "Arizona researchers say that a fungal disease killing off frogs in the state probably isn't being triggered by global warming. . . . Since 1998, researchers have known that the chytrid fungus is attacking Arizona frogs. They now say it has occurred in 12 Arizona frog species, according to a 2003 Arizona Game and Fish report. About half these species declined significantly because of the disease, while the disease is probably linked to declines in another one-fourth of the species. . . . But warming is not a likely cause for it in Arizona because its climate is generally hotter than in Central and South America." [January 23, 2006, from J. N. Stuart]

• University of California Berkeley scientists reported that "Frogs exposed to a mix of pesticides at extremely low concentrations like those widely found around farms suffer deadly infections, suggesting that the chemicals could be a major culprit in the global disappearance of amphibians," according to the January 25, 2006, *Los Angeles Times*, which continues, "The Berkeley scientists tested four herbicides, including atrazine and alachlor, three insecticides and two fungicides in combinations used on cornfields . . . [in] amounts commonly found in waters near farms but thousands of times lower than the doses in most pesticide experiments, [and] throughout their metamorphosis. . . . [In this] study, even though all the animals harbored harmful bacteria, none developed deadly infections when exposed to just the individual pesticides. But those exposed to the mixture suffered a variety of symptoms, including inability to hold the head up, meningitis, septicemia from a waterborne bacteria and smaller size. The scientists found thymus damage and four times more corticosterone in the blood of exposed frogs, both signs of immune suppression. Corticosterone also slows growth. . . . Atrazine is found in groundwater, streams and ponds near farms. It is banned in Europe. . . . In 2003, after reviewing the risks of atrazine, which has been in use for about 50 years, the Environmental Protection Agency decided not to ban it. Instead, the EPA took the unusual step of allowing its use while requiring Syngenta to monitor towns with contaminated drinking water. The agency concluded that there was `not sufficient evidence that atrazine consistently produces effects' in frogs.' In September, a U.S. District Court judge in San Francisco ruled that the EPA had violated the Endangered Species Act by failing to review the effects on the California red-legged frog when it approved pesticides." [from David Bradford]

Well-traveled toads

Chester Zoo in the U.K. recently bred Puerto Rican Crested Toads, which "occur only on the island of Puerto Rico . . . where they are now critically endangered in the wild. . . . [There are] less than 250 wild crested toads left on the planet. . . . Crested Toads bred at zoos in the United States have already been released into the wild in Puerto Rico in an effort to help sustain populations." [*HerpDigest*, January 16, 2006, from Allen Salzberg]

Still Scary after all these Years

• "About 65 million years ago, when most of South Jersey was underwater and the rest was a fetid swamp, a crocodile died in present-day Gloucester County and sank to the bottom of the sea. Scientists from Drexel University and the New Jersey State Museum know this because they found what remains of the reptile lying submerged in the greenish, sandy clay known as marl. It is one of the most complete skeletons yet recovered of *Thoracosaurus neocesariensis*, a fish-eating crocodile whose remains usually consist of a stray tooth or two. The fossil, discovered in April, will be displayed in Drexel's Stratton Hall, starting January 23, for about a year before heading to the state museum in Trenton. The 15-foot creature lived at the end of the Cretaceous period, just as the dinosaurs were about to become extinct. It was not especially large as crocodiles went. One larger species, which also lived in what is now New Jersey, grew to 45 feet and ate dinosaurs. *Thoracosaurus*, on the other hand, ate fish, its narrow snout handy for slashing quickly through the water to grab prey. Its curved, pointy teeth were designed not for chewing, but for carrying fish on land so they could be swallowed whole." [*Philadelphia Inquirer*, January 15, 2006, from Karen Furnweger]

• Meanwhile a 75-million-year-old specimen of another species of crocodile was discovered, but not in the field—in the back room of the New Mexico Museum of Natural History and Science, lurking amidst 100,000 other odd bits. The curator found the pieces labeled "terror crocodile" and estimated at 30 feet long in life. The creature was collected somewhere in New Mexico and is thus described as the "only one of its kind" in the state [Albuquerque, *New Mexico Tribune*, January 4, 2006, from Karen Furnweger who wrote "Wish I could have been one of these in a previous life."]

Pretty soon they'll be raisin' Hellbender!

"The state of New York listed the Eastern Hellbender as a species of Special Concern in 1983, but that designation did not give the species legal protection. Legislation passed in late 2005 by unanimous approval of the New York State Senate and Assembly and signed by the Governor went into effect on 2 January 2006 giving all Special Concern species protected

status. This new bill also gave the Department of Environmental Conservation the authority to regulate the take of all native amphibians and reptiles in the state. As part of the supporting documentation submitted with the proposed bill was the Model State Herpetofauna Regulations developed by PARC." [The Center for North American Herpetology Lawrence, Kansas - News Release, January 19, 2006, from Joseph Collins]

Just in time to go extinct

Scientists discovered a new species of the genus *Calotriton*, in the Montseny Nature Reserve in Catalonia, Spain. The December *Zoological Journal of the Linnean Society* reports that mitochondrial DNA analyses show 1.5 million years of separation between the Montseny triton and its nearest relative the Pyrenean triton during the first Pleistocene glaciations 1.5 million years ago. "Despite their age, however, the first Montseny tritons were not observed until 1979, probably due to their scarcity, their discreet behavior, and the fact that they were only to be found . . . in five [cold water] streams of the Montseny massif (between 600 and 1200 meters), and appears to prefer the beech forest (*Fagus sylvatica*). Preliminary studies indicate that it could be the amphibian with the smallest distribution area in Europe, and is one of the most endangered." [*HerpDigest*, January 21, 2006, from Allen Salzberg]

Salamander Man busted

"Dutch police have arrested a thief they dubbed the `salamander man' who talked his way into the homes of dozens of unsuspecting people by saying he was looking for his lost salamander, hamster or iguana. . . . They had been hunting the 33-year-old homeless man for months and he had admitted to about 60 thefts in towns across the country. Once inside a house, the man stole wallets and loose cash. Police arrested him . . . after a tip off and found nine empty wallets in his car, which had been stolen the day before." [Reuters, January 23, 2006]

What is it about guys named Ken?

The *Birmingham News* [Alabama] reports: "Minutes after midnight Saturday, Ken Wills parked his sport-utility vehicle in a Homewood High School parking lot, pulled on a poncho, clicked on a flashlight and started down a dark stretch of South Lakeshore Drive looking for salamanders. He had gotten the call—the salamander call. . . . Dozens of people, methodically alerted by the Friends of Shades Creek, ventured to South Lakeshore Drive to watch the first wave in the annual migration of the spotted salamander down Shades Mountain. The migration has absolutes: It will be wet, and it will be dark." [January 22, 2006, from Wes von Papineau]

Virginia is for salamanders

The *Virginia Daily Press* reports: "Students at Cooper Elementary Magnet School in Hampton were so adamant that Virginia have a state amphibian, that their efforts to get one named has become one of the wackier House of Delegates bills introduced this session. The bill . . . would make the Shenandoah Mountain salamander the critter of choice" even though that salamander is not considered a particularly Virginia species, it has the scientific name *Plethodon virginia*, which is why the children chose it. [January 19, 2006, from Wes von Papineau]

Cane Toads still hopping

• Locals in Darwin, Australia, are reacting (or over-reacting) to the arrival of the invasive cane toad (*Bufo marinus*) in their area. The *New Zealand Herald* (January 27, 2006) reports: Darwin is under siege, with locals setting traps, `toad-proofing' backyards and organizing night-time toad musters to capture and kill dozens of the amphibians by torchlight. The plan now is to turn the hundreds of thousands of dead toads into liquid fertilizer, or `toad juice'. . . . The idea has come from a conservation group, FrogWatch, which has led the fight against the toxic invaders in the Northern Territory and has enough dead toads—200 kilograms at last count—to start producing around 300 liters of fertilizer. [from Wes von Papineau]

• Here's an interesting tidbit from the Australian Museum website: "Cane Toads were introduced to Australia to eat French's Cane Beetle and the Greyback Cane Beetle. The `whitegrub' larvae of these beetles eat the roots of sugar cane and kill or stunt the plants. The Australian Bureau of Sugar Experimental Stations imported about 100 toads from Hawaii to the Meringa Experimental Station near Cairns. The toads bred quickly and more than 3000 were released in the sugar cane plantations of north Queensland in July 1935. At that time, some naturalists and scientists warned of the dangers of liberating Cane Toads in Australia. The protesters included a former New South Wales Government Entomologist, W. W. Froggatt, and an Australian Museum Curator, Roy Kinghorn. Their protests resulted in a brief moratorium on the release of toads, but releases resumed in 1936." [Australian Museum Fact Sheet, http://www.amonline.net.au/factsheets/canetoad.htm]

Thanks to everyone who contributed this month and to those (yourself included) who will be sending in stuff for future columns. Please send whole pages of newspapers and magazines, without staples to: Ellin Beltz, POB 1125, Ferndale, CA 95536 or electronic links to ebeltz@ebeltz.net.

Herpetology 2006

In this column the editorial staff presents short abstracts of herpetological articles we have found of interest. This is not an attempt to summarize all of the research papers being published; it is an attempt to increase the reader's awareness of what herpetologists have been doing and publishing. The editor assumes full responsibility for any errors or misleading statements.

PACHYDACTYLUS SYSTEMATICS

A. M. Bauer and T. Lamb [2005, African J. Herpetology 54(2):105-129] report that *Pachydactylus* and its close relatives (*Chondrodactylus*, *Colopus*, *Palmatogecko*) constitute the most species-rich component of the southern African gekkonid fauna. The authors conducted a phylogenetic analysis of mitochondrial (cyt*b*, 12S rRNA, 16S rRNA) and nuclear (RAG-1) gene sequences for these geckos. *Pachydactylus tetensis* + *P. tuberculosus* form the sister group to the remaining taxa; the genus *Elasmodactylus* is resurrected to accommodate these two basal species. The *P. bibronii* group is sister to *Chondrodactylus angulifer*, and is transferred to the latter genus. *Pachydactylus kochii* is the sister species of *Colopus wahlbergii* and is transferred to that genus. All remaining taxa—including the *P. namaquensis* group, the "small-bodied" *Pachydactylus* and *Palmatogecko*—form a well-supported monophyletic assemblage recognized as *Pachydactylus* sensu stricto. The major clades within *Pachydactylus* s.s. include the *capensis*, *serval/weberi*, *rangei*, *rugosus* and *geitje* groups, as well as a diverse "northwestern group" that occurs chiefly in northern Namibia and southern Angola. The fine-scale regional endemism apparent among members of the southern African *Pachydactylus* Group probably reflects an interplay between substrate specialization and vicariant events (both geologically and climatically associated) since at least the Miocene. Explicit phylogenies for *Pachydactylus*, cordylid lizards, scorpions and other taxa provide a basis for the first fine-scaled analytical biogeographic analysis of southern Africa.

LEAF-LITTER GECKOS

L. J. Vitt et al. [2005, Herpetological Monographs 19: 137-152] studied the ecology of four species of closely related leaf litter geckos, *Coleodactylus amazonicus*, *C. septentrionalis*, *Lepidoblepharis xanthostigma*, and *Pseudogonatodes guianensis*, in tropical rainforests of Brazil and Nicaragua. All are found in leaf litter of undisturbed tropical forest where mean hourly surface temperatures vary from 23.5 to 29.1°C. Surface temperatures where individual *C. amazonicus* were found averaged 27.4°C and air averaged 29.9°C. *Coleodactylus amazonicus* was the smallest species and *L. xanthostigma* the largest. The latter was morphologically most different as well. Tail loss rates varied from 45.5 to 81.8% among species. All four species ate very small prey items, largely springtails, homopterans, termites, small insect larvae and spiders. Nevertheless, considerable differences existed among species. Some variation existed among populations of *C. amazonicus*. Prey size was correlated with lizard SVL within and among species. All four species are typically the smallest species in their respective lizard assemblages. Small body size may have consequences for predation. Partially due to small body size, these lizards are vulnerable to extirpation resulting from effects of tree removal on thermal attributes of their leaf litter environment.

ECOLOGY OF TADPOLES IN FOAM NESTS

D. B. Shepard and J. P. Caldwell [2005, Copeia 2005(4): 803-811] note that members of the genus *Leptodactylus* deposit eggs in foam nests; however, species vary in nest deposition sites, which may be aquatic or terrestrial, and the amount of time larvae remain in the nest. Life history characteristics are hypothesized to have a phylogenetic basis, but data to evaluate this idea are lacking for most species of *Leptodactylus*. The authors studied the ecology of tadpoles of *Leptodactylus labyrinthicus* in the Brazilian Cerrado to gain insight into the reproductive ecology of this species. Foam nests of *L. labyrinthicus* were deposited on land generally along the periphery of small, shallow ponds. Internal nest temperatures were lower, less variable, and less influenced by the environment than nest surface temperatures. Only a small percentage of eggs in each nest were fertilized, and tadpoles grew and developed within the foam while feeding on unfertilized eggs. Heavy rainfall washed the majority of tadpoles out of nests and into ponds. Tadpoles collected from the ponds had eggs in their guts, and feeding experiments confirmed that free-living tadpoles of *L. labyrinthicus* eat eggs of other frog species. The reproductive mode of *L. labyrinthicus* is intermediate between two previously described modes for closely related species. This mode may be adaptive in the unpredictable and seasonal environment in which this species occurs.

UNPALATABILITY OF AMPHIBIAN EGGS

M. S. Gunzburger and J. Travisa [2005, J. Herpetology 39(4): 547–571] examined 142 papers, which contained 603 separate predator-prey trials, to investigate whether unpalatability is an important defense against predation for amphibian eggs and larvae. Although unpalatability is often cited as an anti-predator defense, it was rarely demonstrated; 89% of the trials that were reviewed found prey to be palatable. The most extensively studied taxa, the genera *Bufo* and *Rana*, were diagnosed unpalatable at rates comparable to all other taxa. Diagnoses of unpalatability were not always consistent for a prey species across different predators and were influenced by experimental method. Despite these limitations and a conservative definition of unpalatability, several patterns emerged. First, across all taxonomic groups, eggs and hatchlings were unpalatable more often than mobile larval stages. Second, species that breed in temporary ponds were more likely to be palatable to fish predators than those that breed in permanent habitats. Third, fish and caudates were more likely to find amphibian prey unpalatable than insect predators. The authors conclude that unpalatability is rare, but when it occurs, it is a property of an ensemble (predator, prey and alternative prey) and a life-history stage in a particular circumstance but is not a species-specific attribute. They suggest methods of experimentation that could strengthen future research on the palatability of amphibian eggs and larvae.

AMPHISBAENIA OF THE WORLD

C. Gans [2005, Bull. American Mus. Nat. Hist. 289:1-130] provides a checklist and bibliography of the Amphisbaenia of the world. A total of 190 species are included, distributed in four families as follows: Amphisbaenidae (178 species in 18 genera), Bipedidae (3 species in 1 genus), Rhineuridae (1 species in 1 genus), and Trogonophidae (8 species in 4 genera). Additionally, a complete bibliography is included with the references published in this and the preceding centuries about the Amphisbaenia. Within references, information is offered about the species discussed in the papers, the kind of information presented, and further special notes.

CONSERVATION OF ISLAND BOAS

S. M. Bobacka [2005, Copeia 2005(4):879-884] reports that boas (*Boa constrictor*) inhabiting islands off the coast of Belize have been historically collected for the pet trade, and enthusiasts have described these as a dwarfed race. Additionally, it has been suggested that these boas feed on birds, yet no dietary data are available. The author initiated a mark-recapture study of five Belizean island populations and has accumulated data on mainland individuals to describe the natural history and population biology of boas in this region. Results indicate that adult island boas from West Snake Cay eat small passerine birds (gray-breasted martins, *Progne chalybea*) that average 7% of the snake's mass. Fecal samples from boas on other islands contained bird feathers and, although these feathers were unidentifiable, this indicates that other island boa populations also consume birds. Compared to mainland boas, island boas have significantly smaller litters of smaller neonates (lighter and shorter) and have extraordinarily small population sizes (range 8–88 total individuals). According to IUCN criteria, island boas can be classified as Endangered based solely on total population and subpopulation sizes. Collection data, gathered from the literature and unpublished sources, revealed a decline in one island population (Crawl Cay) that is currently estimated to consist of eight free-ranging individuals. Island populations of Belizean boas warrant immediate conservation priority due to their low reproductive output, small population sizes, and continued demand in the pet trade.

SEXING LOGGERHEADS

P. Casale et al [2005, Herpetological Journal 15(3):145-148] note that tail length is the main secondary sexual characteristic of adult sea turtles. To assess the size at which sexual dimorphism in this character becomes evident, six different measurements of tail length were collected or calculated from 2631 *Caretta caretta* specimens found in the waters around Italy. These data show that an average male develops a longer tail at a size of 70 cm and attains sexual maturity at a size of 75–80 cm curved carapace length. Studies of adult sex ratio based on tail measurements should therefore be restricted to specimens > 75 cm. The distance from the cloaca to the posterior margin of the carapace appears to be the most effective measurement for sexing turtles of this size among the six characteristics investigated. In the sample, females are estimated to comprise 61% of the specimens > 75 cm.

NATURAL HISTORY OF A DAY GECKO

I. Ikeuchi et al. [2005, Amphibia–Reptilia 26(4):475-483] investigated the natural history of the diurnal gecko *Phelsuma madagascariensis kochi* with mark–recapture and census methods from the end of the dry season to the middle of the rainy season in a dry forest of Madagascar. Males were larger than females in snout–vent length, tail length and body mass, and also had relatively larger head widths. Hatchlings were observed only in the rainy season. The geckos passively followed ambient temperatures, rarely basked, but had lower cloacal than air temperature at high air temperatures. They preferred high and thick trees. Frequency of sighting decreased in the rainy season. Foraging mode was sit-and-wait. Home ranges of male *P. m. kochi* did not overlap with each other, but partially overlapped with those of females and unsexed individuals. Several ecological traits of *P. m. kochi*, such as male-biased sexual size dimorphism and possible home range defense, seemed more similar to those of diurnal, arboreal lizards (some iguanids and agamids), relying on the visual modality, rather than to those of nocturnal geckos.

FEMALE COURTSHIP CALLS

S. N. Krishna and S. B. Krishna [2005, Amphibia–Reptilia 26(4):431-435] noticed an uncommon phenomenon of female vocalization in the forest litter frog *Rana curtipes* during the breeding season. The authors digitally recorded the male and female vocalization of the litter frogs in the tropical rain forests of the Western Ghats of South India and analyzed the call characteristics. The female call varied from the male call by being single note in composition. In contrast, the male calls were composed of seven to eight notes and longer in duration. Gravid females, occupying the same location every day, were seen to emit low-volume calls when numerous males were round calling at that time. Some females arrived asynchronously and called even in the absence of males possibly to declare their receptive condition. Calling females responded agonistically to receptive conspecifics of the same sex. In addition to declaring receptivity, this calling behavior may be a response to adjacent competing females when the males are few.

AGGREGATION BEHAVIOR IN TADPOLES

M. Spieler [2005, Hepetological Journal 15(3):153-157] note that in the Comoé National Park in Ivory Coast, West Africa, tadpoles of the microhylid frog *Phrynomantis microps* often stay in large and densely packed aggregations near the surface of savanna ponds. Previous studies have shown that aggregation behavior was initiated by the presence of visually guided aquatic predators. This study investigated how efficiently aggregation of *P. microps* tadpoles reduces the risk of predation. An experiment was set up to count the number of attacks by predators on *P. microps* tadpoles at different densities and distributions. The total strike rate of predators was significantly lower when *P. microps* tadpoles were aggregated than when they were randomly distributed. However, per capita strikes rate did not differ significantly between treatments. Further replicate trials might have detected benefits to the individual tadpole from aggregating.

Unofficial Minutes of the CHS Board Meeting, January 13, 2006

Rich Crowley called the meeting to order at 7:30 P.M. Board members Betsy Davis and Jason Hood were absent.

Officers' Reports

Recording Secretary: Zorina Banas read the minutes of the December 16 board meeting. Minor adjustments were made and the minutes were accepted.

Treasurer: Andy Malawy distributed the December financial reports. Andy announced that he had purchased an accounting software package. Mike Dloogatch moved that the CHS reimburse Andy Malawy for the purchase of the software. Marybeth Trilling seconded. The motion was passed with all board members present in favor.

Membership Secretary: Deb Krohn reported that membership stands at 610 members for January 2006.

Vice-president: Linda Malawy reported that Pieter Johnson from the University of Wisconsin will speak about amphibian malformations at the April general meeting. Also, Bob Henderson, Curator of Herpetology at the Milwaukee Public Museum, will speak later this year about his research on the tree boas of Grenada.

Publications Secretary: Erik Williams announced that board members' names and contact information will be updated on the website when Chris Lechowicz returns from Madagascar.

Committee Reports

Shows: Jenny Vollman reported the dates for the Notebaert shows: February 4–5, March 4–5, April 22–23, May 6–7, June 3–4. This year the Lake Forest Discovery Center Reptile Rampage will be held on March 5. Jenny also reported that we are attempting to secure a location at the Arlington Family Pet Expo. Rich Crowley announced that the town of Lockport will be opening a new pool June 24 and they will be having a show called "See You Later, Alligator." Cindy Rampacek mentioned that the Great Lakes Family Pet Expo will be held in Milwaukee on February 12.

ReptileFest: Jenny Vollman reported that Chris Palmer is working on the fliers for ReptileFest. Jenny mentioned that our ads in *Reptiles* magazine for the March, April and May issues are in the Cold Blooded Events section. Steve Sullivan and Jenny Vollman met with Catherine Bojalad about advertising in the *Sun-Times*.

Raffle: Linda Malawy announced that we are looking for a new raffle coordinator.

Grants: Mike Dloogatch reported that he has been getting proposals and the deadline has been extended until Monday, January 16.

Conservation: Steve Sullivan announced that he has signed up for the Chicago Wilderness newsletter and that he will be attending any pertinent meetings.

Old Business

Vet List: Cindy Rampacek has completed the vet list for the website. Linda Malawy suggested contacting the veterinarians on the list to let them know about it and determine if they are interested in being on it.

Membership Survey: Deb Krohn distributed a revised version of the proposed membership survey. Rich Crowley suggested sending them out to our members in the Chicago region.

New Business

Steve Sullivan recently received an email from the Lieutenant Governor's office announcing that Ron Humbert was one of 13 people to receive Illinois's Environmental Hero Award.

Binder: Rich Crowley is putting together a binder spelling out procedures and responsibilities for CHS officers and committee chairs.

Phone contacts: Deb Krohn has been taking the calls for the CHS and she has also been updating the contacts. Cindy Rampacek will take this over as of this meeting.

Meeting reminders: Cindy Rampacek will be setting up a calendar that will automatically email meeting reminders to the CHS Yahoo! group.

Ideas and Suggestions

Steve Sullivan and Jenny Vollman suggested that the CHS advertise in the *Reptiles* magazine Annual Edition. Possible sizes and content for such an ad were discussed.

Andy Malawy distributed forms that he had prepared. He asked that they be filled out and submitted along with receipts when requesting reimbursement for expenses.

Andy suggested making a poster promoting ReptileFest.

Roundtable

Deb Krohn mentioned a program on herp care she will be giving for the Will County Forest Preserve District.

Linda Malawy suggested putting together a care package for members of the Gulf Coast Herpetological Society who lost much equipment as a result of Hurricane Katrina.

The meeting was adjourned at 9:53 P.M.

Respectfully submitted by Zorina Banas, Recording Secretary.

Chicago Herpetological Society
Revised Income Statement: January 1 – December 31, 2005

Income		Expense	
Adoptions	$ 2,380.00	Adoptions	$ 1,800.25
Grants	20.00	Grants	3,600.00
ReptileFest	29,771.00	ReptileFest	18,603.67
Other CHS Shows	3,492.00	Other CHS Shows	877.19
Merchandise Sales	4,134.25	Merchandise Sales	4,018.72
Conservation—Massasaugas	612.00	Conservation—Massasaugas	1,697.36
Conservation—*Cyclura*	26.00	Conservation—*Cyclura*	155.00
Conservation—CIG*	90.00	Conservation—CIG	139.26
Membership Dues	14,383.87	Printing / Duplicating	13,061.01
Contributions	1982.55	Addressing / Mailing Service	2,482.67
Amazon.com	112.08	Bank Fees	26.00
Bulletin Ads	283.00	Donations	120.00
Bulletin Back Issues	26.50	Liability Insurance	4,899.00
Interest	252.44	Library	128.99
Raffle	1,419.90	Office Supplies	97.42
		Equipment	3,076.98
		Postage	2,473.11
		Rent (board meetings)	550.00
		Speaker Reimbursement	1,613.34
		Telephone	581.33
		Miscellaneous	178.13
Total Income	$58,985.59	Total Expense	$60,179.43

* CIG = Cryptobranchid Interest Group

Net Income ($1,193.84)

Chicago Herpetological Society
Revised Balance Sheet: December 31, 2005

Assets	
Harris Checking	$ 8,090.76
Harris Money Market	27,861.30
Total Assets	$35,952.06
Equity	
Restricted – Adoptions	$ 5,252.63
Restricted – Grants	2,016.00
Restricted – Massasauga	72.00
Retained Earnings	29,805.27
Net Income	(1,193.84)
Total Equity	$35,952.06

Advertisements

For sale: rats and mice—pinkies, fuzzies and adults. Quantity discounts. Please send a SASE for pricelist or call Bill Brant, *THE GOURMET RODENT*, 6115 SW 137th Avenue, Archer FL 32618, (352) 495-9024, E-mail: GrmtRodent@aol.com.

For sale: from **The Mouse Factory**, producing superior quality, frozen feeder mice and rats. We feed our colony a nutrtionally balanced diet of rodent chow, formulated especially for us, and four types of natural whole grains and seeds. Mice starting from: pinks, $.17 each; fuzzies, $.24 each; hoppers, $.30 each; weanling, $.42; adult, $.48. Rats: starting with pinks at $.45 each, to XL at $1.80 each. Discount prices available. We accept Visa, MC, Discover or money orders. PO Box 85, Alpine TX 79831. Call **toll-free** at (800) 720-0076 or visit our website: < http://www.themousefactory.com> .

For sale: **high quality frozen feeders**. Over a decade of production and supply. Seven sizes of mice availabe: small newborn pinks up to jumbo adults. Prices start at $25 per 100. Feeders are separate in the resealable bag, not frozen together. Low shipping rates. Free price list. Kelly Haller, 4236 SE 25th Street, Topeka KS 66605, (913) 234-3358 evenings and weekends.

For sale: books. Three children's books: *Cottonmouths*, *Copperheads*, and *Cobras*, all by Linda George, 48 pp. each, excellent color photos, ex-library, title pages missing, library wear (i.e., some pages wrinkled, dog-eared or torn), hardbound, $12 for all 3; *Boy's Book of Snakes* by Percy A. Morris, 1948, 185 pp., many b&w photos, written for "boys and girls of the out-of-doors," contains field observations, hardbound, $20; *The Reptiles* by Archie Carr, 1977, 192 pp., many color and b&w photos, drawings, excellent book by this noted writer and herpetologist, hardbound, $9; *Reptiles of Australia* by Charles Barrett, 1950, 168 pp., b&w photos, drawings, figs., no DJ, hardbound, $80; *Australia's North—A Natural History of Australia (Part 3)* by Stanley and Kay Breeden, 1975, 208 10× 12" pp., profusely illustrated with excellent color and b&w photos and drawings, an outstanding account of the ecology of Kakadu National Park and other areas in the Northern Territory, includes many reptiles, DJ, hardbound, $35; *Records of the American-Australian Scientific Expedition to Arnhem Land—Vol. 4—Zoology* edited by R. L. Specht, 531 pp., many b&w and color drawings, some b&w photos, covers mollusks, fishes, reptiles and amphibians (35 pp.), birds, and mammals, published by Melbourne University Press, DJ on spine split at top and bottom, hardbound. $95. All books in excellent condition except as noted. Postage $2.50 for orders under $25, free for orders of $25 or more. William R. Turner, 7395 S Downing Circle W, Littleton, CO 80122, (303) 795-5128, e-mail: toursbyturner@aol.com.

For sale: many aquariums from 10 to 75 gallons, call for prices, (708) 799-6697.

For sale: one 3-year-old female Colombian boa constrictor, 4½–5', very nice color and pattern, feeding on thawed frozen rats, $195 o.b.o., with 3-foot Neodesha cage, $245; one 4-year-old Sonoran gopher × Texas bull snake, 4–5' long, feeding on thawed frozen rodents, excellent color and pattern, yellow, black and light brown, must see, $95 o.b.o, with 20-gallon long aquarium & secure screen top, $140; one male Okeetee corn snake, 4–4½', excellent color and pattern, top of snake is orange, red and black, belly is black-and-white checkerboard, $85 o.b.o, with 2-foot Neodesha cage, $125. All snakes can be brought to CHS monthly meetings to be viewed. Art Nohlberg, (773) 278-2654.

For sale: two male Mandarin rat snakes, about 30", $250 each; ten baby (1½') boa constrictors (¼of littermates albinistic), $125; four baby albinistic boa constrictors (1½'), $800–1200 each; one male and two female 6' *Elaphe taeniura ridleyi*, cave rat snakes (China), $900/trio; one male and one female 2½' Honduran milksnakes (one is tangerine), $100 each; two 3' blue beauty rat snakes, $75 each; one 3' California kingsnake (coastal), $75; one male and one female possible ghost hypo boa constrictors, 2', $700/pair; one 3' male ladder tail boa constrictor, $150; one 2½' male reverse stripe boa constrictor, $100. Will deliver in Chicago area or to CHS monthly meetings. Bill, (708) 799-6697.

Herp Tours: Why pay more? Travel with the International Fauna Society, a 501 (c)3 not-for-profit organization, and experience the Costa Rican rainforest! Stay at the beautiful Esquinas Rainforest Lodge in the untouched herpetological paradise that is Piedras Blancas National Park. Meet new friends, relax in the naturally-filtered swimming pool or in the lush, fauna-filled tropical garden. Discounts for IFS and Chicago Herp Society members. For details, visit The International Fauna Society website at www.faunasociety.org or E-mail: info@faunasociety.org.

Herp tours: Adventure trips to **Madagascar**! Journey somewhere truly unique to seek and photograph nature on the world's least-studied mini-continent. For maximum herp fun and discovery, join Bill Love as we go where few people will ever venture in their lives. Let his experience assure a comfortable tour finding the most colorful and bizarre species on the planet! Get all the details at Blue Chameleon Ventures' comprehensive new website: < http://www.bluechameleon.org> , E-mail: bill@bluechameleon.org, or call (239) 728-2390.

Herp tours: The beautiful Amazon! Costa Rica from Atlantic to Pacific! Esquinas Rainforest Lodge, the Osa Peninsula, Santa Rosa National Park, and a host of other great places to find herps and relax. Remember, you get what you pay for, so go with the best! GreenTracks, Inc. offers the finest from wildlife tours to adventure travel, led by internationally acclaimed herpers and naturalists. Visit our website < http://www.greentracks.com> or call (800) 892-1035, e-mail: info@greentracks.com

Internship: The Kentucky Reptile Zoo, a nonprofit organization, seeks student interns for the 2006 season. The zoo is an educational exhibit, reptile breeding and venom research facility located near Kentucky's Red River Gorge and Natural Bridge State Park. The intern will assist in the captive maintenance of the zoo's reptile collection, collect admissions to the exhibit, give interpretive talks and interact with the public, assist with educational outreach programs, and perform other duties as assigned. In addition, the intern will be responsible for the completion of at least one research project related to the field of herpetology. The intern will *not* be involved in the handling of any venomous species. Desirable qualifications include a willingness to handle snakes and other reptiles on a daily basis, ability to communicate effectively with people, writing skills, orientation to details, and self-motivation. The intern will be required to work both Saturday and Sunday, with days off during the week. Students majoring in the biological or natural sciences are preferred. Interns are required to be either college students or recent graduates. Former interns have arranged for academic credit with their institutions. Benefits include experience with one of the most extensive and diverse collection of snakes in the U.S., housing and $55/week to cover expenses. Interns have been successful in finding zookeeper positions: over 95% hire rate! Personal transportation is recommended. A valid driver's license is required. Starting dates are flexible, but a minimumof 3 months covering summer (June–August), or fall (September–November) is required. Deadlines are April 1 for summer and July 1 for fall. To apply send a cover letter, resume, transcript, and at least 2 (preferably 3) references to: Kristen Wiley, Internship Coordinator, Kentucky Reptile Zoo, 200 L&E Railroad, Slade KY 40376. Or E-mail: kyreptil@pop.mis.net.

Reptile show: Wisconsin Reptile Breeders' Show and Sale, Saturday, April 22, 10 A.M. to 4 P.M., 1011 Nichols Road, Monona, Wisconsin. Captive-bred only. $4 admision, $2 under 12. Info: aor@chorus.net or (608) 238-2891.

Virtual Museum of Natural History at www.curator.org: Free quality information on animals—emphasis on herps—plus expedition reports, book reviews and links to solid information. Always open, always free.

Wanted: To hire housesitter and feeder of female reticulated python in Washington, D.C., for late spring/summer 2006. To learn more, contact kbricker@oceanconservancy.org or call (301) 320-4457.

Line ads in this publication are run free for CHS members—$2 per line for nonmembers. Any ad may be refused at the discretion of the Editor. Submit ads to: Michael Dloogatch, 6048 N. Lawndale Avenue, Chicago IL 60659, (773) 588-0728 evening telephone, (312) 782-2868 fax, E-mail: MADadder0@aol.com.

RON HUMBERT HONORED

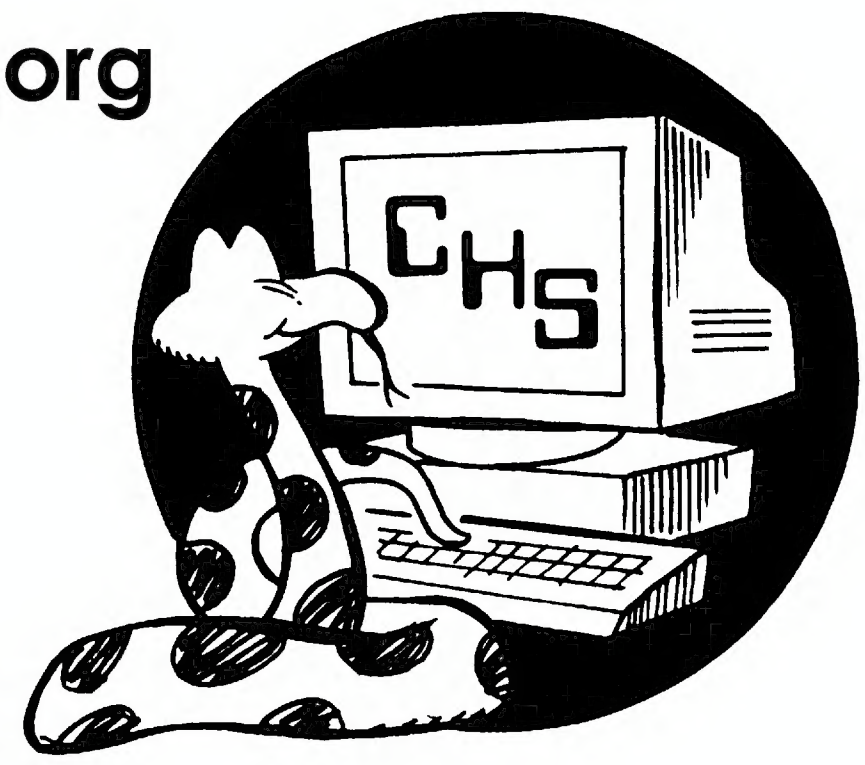
At the Shedd Aquarium on Thursday, December 29, Ron Humbert posthumously received an Illinois Environmental Hero Award for 2005. Ron was one of 13 citizens, cities and groups statewide that were so honored. The award was bestowed by Lieutenant Governor Pat Quinn in recognition of Ron's work in educating students about the ecological importance of reptiles and amphibians.

MICHIGAN HERPETOLOGY SYMPOSIUM

The Detroit Zoo will host a symposium on Herpetology in Michigan on Saturday, March 4, 2006. It will feature lectures and open forum discussions on current herp research in the state of Michigan. There will also be an opportunity to tour the Detroit Zoo's herp collection. Speakers will include: Al Holman, "History of Herpetology in Michigan"; Jim Harding, "Turtle Conservation"; Jim Gillingham, "Herps of the Beaver Island Archipelago"; Jim Ball, "*Ambystoma laterale* Complex"; Bruce Kingsbury, "Massasaugas in Michigan"; Edi Sonntag, "Status of Cricket frogs in Michigan" and many others. Registration is 8:00 – 9:00 A.M. Talks will begin at 9:15 A.M. and the symposium will wrap up at 5:00 P.M. Registration is $15 due at the door. If you plan to attend, please notify Bill Flanagan at bflanagan@detroitzoo.org by February 25. For the latest schedule of speakers, check http://www.detroitzoo.org/Attractions/Amphibiville/Amphibiville/

Next time you surf the WorldWide Web, crawl, run, slither, slide, jump, or hop over to the CHS web site!

www.chicagoherp.org



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- **CHS events calendar & information**
- **Herp news**
- **Herp links**
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- **Photos of Illinois amphibians & reptiles**
- **Much, much more!**

Chicagoherp.org is accepting applications for banner advertisements or links from herpetoculturists and manufacturers of herp-related products. Visit the site and contact the webmaster for details on how you can sponsor CHS!

UPCOMING MEETINGS

The next meeting of the Chicago Herpetological Society will be held at 7:30 P.M., Wednesday, February 22, at the Peggy Notebaert Nature Museum, Cannon Drive and Fullerton Parkway, in Chicago. **Alan Kardon**, Curator of the Reptile/Amphibian/Aquarium Department at the San Antonio Zoo, will speak on "Life History Traits of the Lance-headed Rattlesnake, *Crotalus polystictus*: A Long-term Mark– Recapture Study." Alan and his colleagues have discovered that this tropical Mexican rattlesnake differs in many interesting ways from the temperate species that are more familiar to most of us. Alan will also present photos from recent trips to the Mexican states of Durango and Zacatecas.

At the March 29 meeting, **Thomas Eimermacher**, a graduate student in biology at Southeastern Louisiana University, will present "Swimming with Cobras," an account of an expedition he led to study Storm's water cobra, *Boulengerina annulata stormsi*, which inhabits Lake Tanganyika in western Tanzania.

The regular monthly meetings of the Chicago Herpetological Society take place at Chicago's newest museum — the **Peggy Notebaert Nature Museum**. This beautiful new building is at Fullerton Parkway and Cannon Drive, directly across Fullerton from the Lincoln Park Zoo. Meetings are held the last Wednesday of each month, from 7:30 P.M. through 9:30 P.M. Parking is free on Cannon Drive. A plethora of CTA buses stop nearby.

Board of Directors Meeting

Are you interested in how the decisions are made that determine how the Chicago Herpetological Society runs? And would you like to have input into those decisions? If so, mark your calendar for the February 11 board meeting, to be held at the North Park Village Administration Building, 5801 North Pulaski Road, Chicago. To get there take the Edens Expressway, I-94, and exit at Peterson eastbound. Go a mile east to Pulaski, turn right and go south to the first traffic light. Turn left at the light into the North Park Village complex. At the entrance is a stop sign and a guardhouse. When you come to a second stop sign, the administration building is the large building ahead and to your left. There is a free parking lot to the left and behind the building.

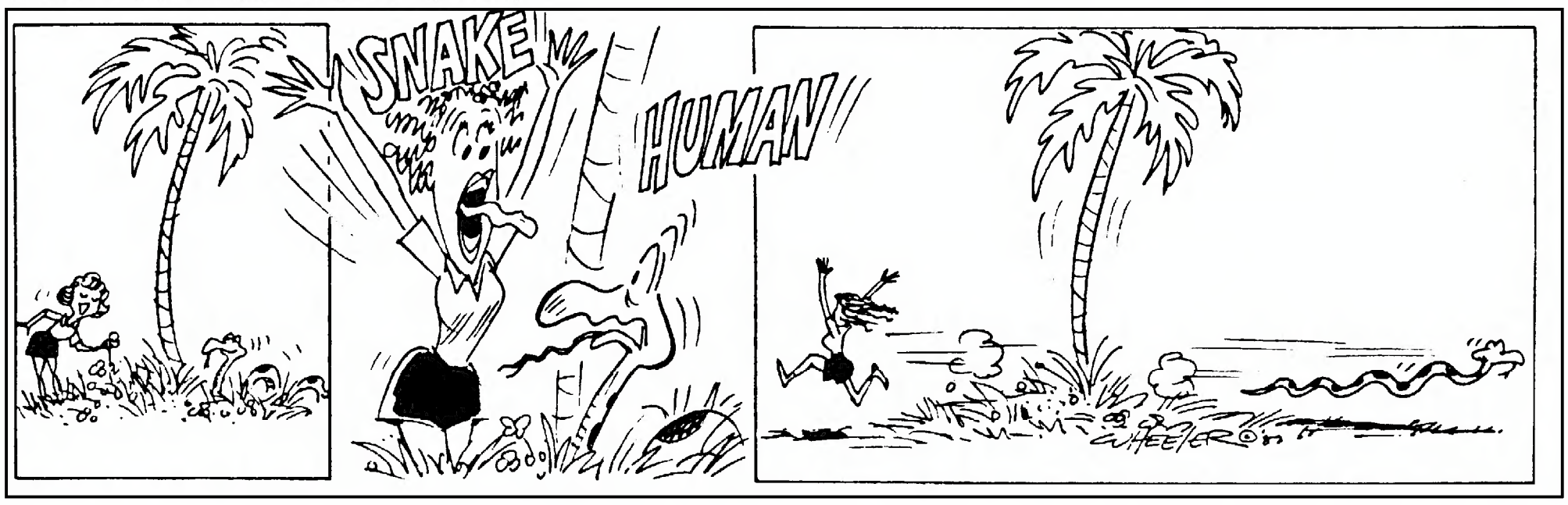
The Chicago Turtle Club

The monthly meetings of the Chicago Turtle Club are informal; questions, children and animals are welcome. Meetings normally take place at the North Park Village Nature Center, 5801 N. Pulaski, in Chicago. Parking is free. For more info call Lisa Koester, (773) 508-0034, or visit the CTC website: http://www.geocities.com/~chicagoturtle.

2006 SALAMANDER SAFARI

This year, the annual CHS Salamander Safari will be held on Saturday, March 25, 10 A.M. – 3 P.M., beginning at the Plum Creek Nature Center at Goodenow Grove Forest Preserve in Will County. Goodenow Grove is south of Crete, Illinois, 1¼miles east of the intersection of Route 1 and Route 394 on Goodenow Road. If you need directions to get to this area, call Deb Krohn at the nature center, (708) 946-2216. From Plum Creek we will drive to other Forest Preserve District of Will County sites to search for amphibians. Species found or heard calling in previous inventories include spotted salamanders, blue-spotted salamanders, gray treefrogs, spring peepers, chorus frogs, bullfrogs, green frogs, and northern leopard frogs. Species not yet found but possibly occurring (or occurring at preserves nearby) include newts and wood frogs. As in past safaris, CHS members are encouraged to bring interesting amphibians from their personal collections for photography and display purposes. Coffee, juice and donuts will be provided, and a good time will be had by all!

THE ADVENTURES OF SPOT



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